EMERGENCIES

General Information:
LHDs must be able to respond to a range of medical emergencies, potentially violent or abusive situations, and facility or natural/weather related emergencies. Staff must be familiar with emergency supplies and equipment and trained in their use, as appropriate.

Procedures for non-medical emergencies such as fire, tornadoes/severe weather conditions, earthquakes, and bomb threats shall be addressed in the LHD's Emergency Evacuation and Fire Prevention Control Procedures Plan. Training is to occur on at least an annual basis. For further information, refer to the Administrative Reference, Vol. I, Section VIII-LHD Operations for LHDs. (Also see the Disaster Recovery and Response Plan Manual).

MEDICAL EMERGENCIES

LHDs should be prepared for medical emergencies, particularly, life-threatening drug reactions. Established procedures, adequate and properly maintained equipment, and appropriately trained staff are essential.

- Protocols for emergency care for anaphylactic reactions, and management of vasovagal reactions and syncope should be signed by a local physician and a copy kept with the emergency supplies.
- If the LHD stocks an Automated External Defibrillator (AED) device, it must develop and maintain local policies on its use and maintenance.
- LHD prepared for more extensive emergency measures should have a locally developed protocol in place to guide staff.
- Emergency equipment, supplies, and medications should be maintained on a crash cart or emergency tray.
- An inventory list is to be kept with the crash cart or emergency tray and monitored monthly according to an established schedule to ensure that they are not depleted or expired. Emergency supplies should be sealed when not in use.
- All physicians, clinicians, and nurses should be certified in CPR.
- All staff should be offered the opportunity to participate in CPR training.
- At a minimum, all staff must know their role in an emergency situation.
- All staff should have access to the Poison Control phone number, 1-800-222-1222, and it should be posted in a prominent place.

EMERGENCY EQUIPMENT, SUPPLIES, AND MEDICATIONS

Inventory List*

(When Equipment and Supplies are replaced, LHDs should order Latex-free.)

- AMBU bag – at least 1 Adult and 1 Pediatric unit (Latex-free), checked for physical integrity at least monthly and replaced per manufacturer's recommendations.
- One-way masks – at least 1 adult and 1 pediatric mask. latex-free, and at least one replacement piece for each mask
- Sphygmomanometer, age appropriate, ex. pediatric, adult, extra-large – serviced according to manufacturer's recommendations
- Stethoscope
- Flashlight and extra batteries
- Oxygen tank with mask (serviced yearly and checked monthly)
- Syringes and needles of various sizes, including filtered needles for use with ampoules (for the removals of minute particles of glass, filtered needles are not to be used for administration.)
- Alcohol swabs or sponges
- Gloves, latex-free
- Aqueous epinephrine (1:1000); in either prefilled syringes, EpiPen® Auto-Injectors (0.3 mg) and EpiPen® Jr (0.15 mg) Auto-Injectors, or ampoules; at least 4 but more for medically isolated clinics). DO NOT BUY 30 mL vials of aqueous epinephrine.
- Diphenhydramine hydrochloride (HCL) (Benadryl® elixir) Liquid (Each 5 mL contains 12.5 mg of Diphenhydramine HCL); Diphenhydramine hydrochloride (Benadryl® Injection) 50 mg/mL in ampoules, disposable syringes, or vials, (a minimum of 4)
- Poison Control phone number 1-800-222-1222
  Find Your Local Poison Center:
  http://www.aapcc.org/dnn/AAPCC/FindLocalPoisonCenters.aspx
- Kentucky Regional Poison Center
  Medical Towers South, Suite 847
  234 East Gray Street
  Louisville, KY 40202
  Emergency Phone: (800) 222-1222
  http://www.krpc.com/
- Emergency equipment, supplies and medications inventory list with log of monthly reviews/inventory
- Emergency protocols signed by a local physician

*A copy of the Emergency Equipment, Supplies, and Medications list is to be placed on the crash cart, emergency tray, or off-site emergency kits with a copy of the current signed protocols.

LHDs may develop modified equipment lists and modified emergency and anaphylactic shock protocols for off-site service or alternate service delivery sites. These should, at a minimum, include epinephrine and diphenhydramine hydrochloride, as well as access to a phone to summon emergency personnel (911).

MEDICAL EMERGENCIES PROTOCOL*

For various reasons in a LHD setting, a patient may complain of feeling "light headed", "faint", or actually "passing out". This may be as simple as a reaction to certain sensory stimuli, real or perceived pain, or sudden changes in position or as severe as an acute medical condition, such as cardiac or other life threatening conditions.

Condition	Intervention
Syncope/Vasovagal Reaction "light headed – fainting" Response to patient is usually immediate when measures are taken.	• ABC's (Airway, Breathing, Circulation) • Place patient in supine position and loosen clothing. • Elevate lower extremities 20–30 degrees. • Monitor and record BP, pulse and respirations. • Document all findings and actions in patient's medical record. • Question patient after episode about feelings prior to syncope and whether this is an isolated event or "usual response" to certain stimuli. • Advise patient to report this to their physician or primary care provider for further investigation.
Suspected Severe, Acute Medical Condition including cardiac arrest, shock, hemorrhage, and/or aspiratory difficulties	• ABC's • Call for staff assistance • Maintain **AIRWAY**, provide **CPR** if necessary o Place patient in supine position and loosen clothing. o Monitor and record vital signs. • Call 911 or local Emergency Medical Services immediately (preferably have someone not involved in direct patient care make the call).

*Place a copy of this protocol on the crash cart, emergency tray with the Emergency Equipment, Supplies and Medications Inventory List and the Treatment of Anaphylactic Shock Protocol. Modified emergency and anaphylactic shock protocols may be developed locally for off-site service.

M.D. Signature Date

ANAPHYLAXIS

Anaphylaxis is defined as a rare, severe, and sudden allergic reaction. This acute hypersensitivity reaction is potentially fatal, and can occur within seconds to minutes to hours after exposure to an antigen. Anaphylaxis is a medical emergency; initial reactions can range from mild to severe.

Common triggers for anaphylaxis are foods (e.g., peanuts, tree nuts, shellfish, fish, milk, or eggs), insect venoms (e.g., bees or wasps), medications (e.g., penicillin and other beta-lactam antibiotics, narcotics allergy extracts, vaccines, and other biologicals [e.g.,immune globulin and blood transfusions]), natural rubber latex exposure, and radiocontrast media.

"New diagnostic criteria for anaphylaxis were published in 2006 to help health care professionals both recognize the spectrum of signs and symptoms that constitute anaphylaxis and establish a more systematic approach to its diagnosis and management. **The following 3 criteria were established, and the presence of *any 1* of these criteria indicates that anaphylaxis is highly likely**:

- Acute onset of an illness (over minutes to several hours) involving skin, mucosal tissue, or both (for example, generalized hives, pruritus or flushing, swollen lips-tongue-uvula), and **at least 1 of the following**:
    - Respiratory compromise (for example, dyspnea, wheeze-bronchospasm, stridor, reduced peak expiratory flow rate, hypoxemia)
    - Reduced blood pressure (BP) or associated symptoms of end-organ dysfunction (for example, hypotonia (circulatory collapse), syncope, incontinence) ***OR***

- **Two or more of the following** that occur rapidly after exposure to a likely allergen for that patient (minutes to several hours):
    - Involvement of the skin-mucosal tissue (for example, generalized hives, itch-flush, swollen lips-tongue-uvula)
    - Respiratory compromise (for example, dyspnea, wheeze-bronchospasm, stridor, reduced peak expiratory flow rate, hypoxemia)
    - Reduced BP or associated symptoms of end-organ dysfunction (for example, hypotonia, syncope, incontinence)
    - Persistent GI symptoms (for example, crampy abdominal pain, vomiting) ***OR***

- Reduced BP after exposure to a known allergen for that patient (minutes to several hours). Reduced BP is defined:
    - In adults, as a systolic BP of less than 90 mm Hg or greater than 30% decrease from that person's baseline
    - In infants and children, as a low systolic BP (age-specific) or greater than 30% decrease in systolic BP. Low systolic BP is defined as:
        - Less than 70 mm Hg for ages 1 month to 1 year
        - Less than (70 mm Hg plus twice the age) for ages 1 to 10 years
        - Less than 90 mm Hg for ages 11 to 17 years

Note: In infants and young children, hypotension may be a late manifestation of hypovolemic shock. Tachycardia, in the absence of hypotension, also may indicate shock."[+]

[+] Boyce JA, Assa'ad A, Burks AW, Jones SM, Sampson HA, Wood RA, et al. **Guidelines for the diagnosis and management of food allergy in the United States: Report of the NIAID-sponsored Expert Panel.** *J Allergy Clin Immunol*. 2010 Dec;126(6 Suppl):S36-S37.

PROTOCOL FOR TREATMENT OF ANAPHYLAXIS *

<table>
<tr><th>Condition</th><th>Observation/ Assessment</th><th>Intervention (Mild and Moderate Reactions)</th></tr>
<tr><td>MILD REACTION (May rapidly progress to a more severe reaction)</td><td>Generalized flush
Red, itchy, eyes
Itching at the injection site or at other body sites
Localized to generalized urticaria (hives)
Vomiting, abdominal pain</td><td rowspan="2">ABC’s.
Call 911 or local EMS STAT (Preferably have someone not involved in direct patient care make the call).
Place patient in supine position.
Monitor vital signs.
GIVE OXYGEN BY MASK, if any respiratory symptoms are present
Special instructions** for O2 administration, if given (O2 flow rate, lpm) _____
FIRST-LINE TREATMENT: GIVE AGE AND WEIGHT APPROPRIATE DOSES OF EPINEPHRINE, intramuscularly, preferably in the anterolateral thigh (See Table 1). Repeat every 5–15 minutes, up to 3 doses, depending on patient’s response
SECONDARY TREATMENT: As an adjunct to epinephrine, give weight or age appropriate doses of diphenhydramine HCL orally or intramuscularly (See Table 2 or Table 3). DO NOT GIVE diphenhydramine HCL to infants aged less than 7 months
Continue to observe for change in symptoms (lessening or worsening)
Maintain accurate emergency flow sheet showing:
Date
Time of occurrence
Vital Signs
Medication(s) (time, dosage, response,, name of healthcare personnel who administered the medication)
Immediate therapy
Disposition of patient (transfer for further emergency care ASAP)
Send summary of emergency treatment with patient with written assessment of patient’s condition at time of transfer.
Document all measures taken in patient’s medical record and place allergy label on front of patient’s medical record. Advise patient (parent) about the drug or trigger that caused reaction.
Advise patient (parent) to report reaction to their physician or primary care provider.</td></tr>
<tr><td>MODERATE REACTION</td><td>Mild to moderate wheezing
Coughing
Complains of generalized itching, itching throat
Generalized urticaria (hives)
Swelling of lips, face, tongue, eyelids, hands, feet, or genitalia.
Vomiting, diarrhea, and/or abdominal pain</td></tr>
</table>

* Place a copy of this protocol on the crash cart, emergency tray with the Emergency Equipment, Supplies and Medications Inventory List and Medical Emergencies Protocol. Modified emergency and anaphylactic shock protocols may be developed locally for off-site service.

**Oxygen flow rates, particularly for infants and children, depend upon the equipment available. Local health departments should annotate protocols with the flow rates appropriate for local equipment. Please see this American Association of Respiratory Care online reference, http://www.aarc.org/resources/protocol_resources/documents/AARCpedO2.pdf

_____

M.D. Signature Date

PROTOCOL FOR TREATMENT OF ANAPHYLAXIS*

(Continued)

Condition	Observation/ Assessment	Intervention (Severe Reaction)
SEVERE REACTION	• Anxiety • Shortness of Breath • Severe Wheezing • Progressive swelling of lips, face, tongue, eyelids, hands, feet, or genitalia. • Progressive generalized urticaria (hives) • Restlessness • Headache • Vomiting • Incontinence • Cyanosis • Confusion • Weak rapid pulse • Hypotension • Shock • Unconsciousness	• ABC's • Call 911 or local EMS STAT (Preferably have someone not involved in direct patient care make the call). • Place patient in supine position. • Elevate legs and loosen clothing. • Elevate head, if breathing is difficult. • Monitor pulse and respiration, mental status q 1–2 minutes. • Monitor BP – age 3 years and up • **GIVE OXYGEN BY MASK** (Maintain airway – hypoxia can result from hypotension and upper airway edema). o **Special Instructions** for O_2 administration, if given (O2 flow rate, lpm) _____** • **FIRST-LINE TREATMENT:** GIVE AGE AND WEIGHT APPROPRIATE DOSES OF EPINEPHRINE, intramuscularly, preferably in the anterolateral thigh (See Table 1). Repeat every 5–15 minutes, up to 3 doses, depending on patient's response • **SECONDARY TREATMENT**: As an adjunct to epinephrine, give weight or age appropriate doses of diphenhydramine HCL intramuscularly (See Table 3). DO NOT GIVE diphenhydramine HCL to infants aged less than 7 months • Perform cardiopulmonary resuscitation, if necessary • Maintain accurate emergency flow sheet showing: o Date o Time of occurrence o Vital Signs o Medication(s) (time, dosage, response,, name of healthcare personnel who administered the medication) o Immediate therapy o Disposition of patient (transfer for further emergency care ASAP) • Send summary of emergency treatment with patient with written assessment of patient's condition at time of transfer. • Document all measures taken in patient's medical record and place allergy label on front of patient's medical record.

* Place a copy of this protocol on the crash cart, emergency tray with the Emergency Equipment, Supplies and Medications Inventory List and Medical Emergencies Protocol. Modified emergency and anaphylactic shock protocols may be developed locally for off-site service.

**Oxygen flow rates, particularly for infants and children, depend upon the equipment available. Local health departments should annotate protocols with the flow rates appropriate for local equipment. Please see this American Association of Respiratory Care online reference, http://www.aarc.org/resources/protocol_resources/documents/AARCpedO2.pdf

_____

M.D. Signature Date

ADVERSE EVENTS FOLLOWING VACCINATION

Adverse events have been reported following the administration of all vaccines. These events range from frequent, minor, local reactions to extremely rare, severe, systemic illness.

Events that occur after receipt of vaccine purchased with public (federal, state, and/or local government) funds must be reported on the Vaccine Adverse Event Reporting System (**VAERS Form)** by the administering health provider. There are three ways to report to VAERS: online, fax, and by mail, http://vaers.hhs.gov/esub/index. See the PHPR Immunization chapter for additional information.

DOSAGES OF EPINEPHRINE AND DIPHENHYDRAMINE HCL (BENADRYL®)

Dosages of epinephrine and diphenhydramine HCL (Benadryl®) for the medical management of anaphylactic reactions are listed in Tables 1 through Table 3 below. These tables were adapted from the "Medical Management of Vaccine Reactions in Children and Teens" and the "Medical Management of Vaccine Reactions in Adult Patients" that were published by the Centers for Disease Control and Prevention in Appendix D of the of "***Epidemiology and Prevention of Vaccine-Preventable Diseases,*** 12th edition**"** (The Pink Book), http://www.cdc.gov/vaccines/pubs/pinkbook/default.htm.

CAUTION: Some printed and bound copies of the 12th edition of the Pink Book contain errors in Appendix D that have been corrected in two versions of revisions that have been published online. Health departments that have bound copies of the 12th edition of the Pink Book should compare Appendix D in the bound books with these latest revisions and replace pages, as needed.

Revised copies of Appendix D may be viewed and downloaded on the following Websites:

- The Pink Book: Appendices, http://www.cdc.gov/vaccines/pubs/pinkbook/pink-appendx.htm#appd
- Immunize.org, http://www.immunize.org/handouts/vaccine-reactions.asp
    - Medical Management of Vaccine Reactions in Teens" http://www.immunize.org/catg.d/p3082a.pdf
    - "Medical Management of Vaccine Reactions in Adult Patients http://www.immunize.org/catg.d/p3082.pdf

Table 1: Dosages for Epinephrine Administered Intramuscularly

The recommended dose of epinephrine is 0.01 mg/kg body weight. Repeat every 5–15 min. up to 3 doses, depending on patient's response.

	Age Group:	Range of Weight (Pounds)*	Range of Weight (Kilograms)*	Epinephrine Dose:	
				1 mg/mL injectable (1:1000 dilution) intramuscular (IM) Minimum dose: 0.05 mL	Epinephrine Auto-Injector (EpiPen)
Infants and Children	1 - 6 months	9 - 19 lbs	4 - 8.5 kg	0.05 mL (or mg)	Off label
	7 - 36 months	20 - 32 lbs	9 - 14.5 kg	0.1 mL (or mg)	Off label
	37 - 59 months	33 - 39 lbs	15 - 17.5 kg	0.15 mL (or mg)	0.15 mg
	5 - 7 years	40 - 56 lbs	18 - 25.5 kg	0.2 - 0.25 mL (or mg)	0.15 mg
	8 - 10 years	57 - 76 lbs	26 - 34.5 kg	0.25 - 0.3 mL† (or mg)	0.15 mg or 0.3 mg
Teens	11 - 12 years	77 - 99 lbs	35 - 45 kg	0.35 - 0.4 mL (or mg)	0.3 mg
	13 - 18 years	100+ lbs	46+ kg	0.5 mL (or mg)‡	0.3 mg
Adults	19 years & older	100+ lbs	46+ kg	0.5 mL (or mg)‡	0.3 mg

Note: If body weight is known, then dosing by weight is preferred. If weight is not known or readily available, dosing by age is appropriate.

*Rounded weight for infants, children, and teens at the 50th percentile for each age range

† Maximum dose for children

‡ Maximum dose for teens and adults

Table 2: Dosages for Diphenhydramine HCL (Benadryl®) Administered Orally

The recommended dose of diphenhydramine HCL is 1 – 2 mg/kg body weight.

	Age Group:	Range of Weight (Pounds)*	Range of Weight (Kilograms)*	Benadryl Dose, given orally:	
				12.5 mg/5 mL liquid,	12.5 mg/5 mL liquid Dose, orally, mL
Infants and Children	1 - 6 months	DO NOT GIVE TO THIS AGE GROUP			
	7 - 36 months	20 - 32 lbs	9 - 14.5 kg	10 mg – 20 mg	4 mL – 8 mL
	37 - 59 months	33 - 39 lbs	15 - 17.5 kg	15 mg – 30 mg	6 mL – 12 mL
	5 - 7 years	40 - 56 lbs	18 - 25.5 kg	20 mg – 30 mg	8 mL – 12 mL
	8 - 12 years	57 - 99 lbs	26 - 45 kg	30 mg†	12 mL†
Teens	13 - 18 years	100+ lbs	46+ kg	50 mg‡	20 mL‡
Adults	19 years & older	100+ lbs	46+ kg	50 mg‡	20 mL‡

Note: If body weight is known, then dosing by weight is preferred. If weight is not known or readily available, dosing by age is appropriate.

*Rounded weight for infants, children, and teens at the 50th percentile for each age range

† Maximum dose for children

‡ Maximum dose for teens and adults

Table 3: Dosages for Diphenhydramine HCL (Benadryl®) Administered Intramuscularly

The recommended dose of diphenhydramine HCL is 1 – 2 mg/kg body weight.

	Age Group:	Range of Weight (Pounds)*	Range of Weight (Kilograms)*	Benadryl Dose, given by injection:	
				50 mg/mL injectable IM	50 mg/mL injectable Volume injected IM, mL
Infants and Children	1 - 6 months	DO NOT ADMINISTER TO THIS AGE GROUP			
	7 - 36 months	20 - 32 lbs	9 - 14.5 kg	10 mg – 20 mg	0.2 mL – 0.4 mL
	37 - 59 months	33 - 39 lbs	15 - 17.5 kg	15 mg – 30 mg	0.3 mL – 0.6 mL
	5 - 7 years	40 - 56 lbs	18 - 25.5 kg	20 mg – 30 mg	0.4 mL – 0.6 mL
	8 - 12 years	57 - 99 lbs	26 - 45 kg	30 mg†	0.6 mL†
Teens	13 - 18 years	100+ lbs	46+ kg	50 mg‡	1 mL‡
Adults	19 years & older	100+ lbs	46+ kg	50 mg‡	1 mL‡

Note: If body weight is known, then dosing by weight is preferred. If weight is not known or readily available, dosing by age is appropriate.

*Rounded weight for infants, children, and teens at the 50th percentile for each age range

† Maximum dose for children

‡ Maximum dose for teens and adults

M.D. Signature Date